



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/699,736 | 11/04/2003 | Bing-Jei Liao | SUND 319CI | 6426 |
| 23995 | 7590 | 11/30/2006 | EXAMINER | |
| RABIN & Berdo, PC 1101 14TH STREET, NW SUITE 500 WASHINGTON, DC 20005 | | | SCHECHTER, ANDREW M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2871 | |

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/699,736

Applicant(s)

LIAO ET AL.

Examiner

Andrew Schechter

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☒ Certified copies of the priority documents have been received in Application No. 10/127,413.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Liquid crystal panel with alternating protrusions and grooves, separating pixel electrodes".

Response to Arguments

2. Applicant's arguments filed 14 September 2006 have been fully considered but they are not persuasive.

The applicant, in response to the previous rejection under 35 USC 112, 2nd paragraph, has rephrased claim 1 slightly and asserts that the claims are definite. This does not address the grounds of the previous rejection, which is therefore repeated below. To sum up the difficulty: protrusions of various types are commonplace in LCDs, and there are always gaps between pixel electrodes, else they would short-circuit; these gaps might be argued by some to constitute grooves. Are these gaps considered to be grooves by the applicant? When a protrusion fills such a gap, is it still considered a groove? The scope of these terms remains unclear. Therefore, the applicant must clearly address on the record the questions raised by the examiner in the rejection under 35 USC 112 below in order to make the scope of the claims definite.

Terminal Disclaimer

3. The terminal disclaimer filed on 21 September 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,665,041 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Objections

4. Claim 14 is objected to because of the following informalities: "second plate" should be "rear plate". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "every two pixel electrodes groups are separated by a groove, and the pixel electrodes of each pixel electrode group are separated by a protrusion". This is unclear, in that it might be thought that a separation (gap) between two pixel electrodes always implies a "groove". The examiner's interpretation is that the gap must not be filled in with any other layers (other than the liquid crystal, of course). Referring to the applicant's Fig. 10B, the examiner interprets pixel electrodes 1002 and 1003 as

Art Unit: 2871

being separated by a protrusion, but not being separated by a groove, despite there being a gap which is filled with the protrusion. That is, where there is a protrusion separating the electrodes, there is by definition not a groove, and where there is a groove, there is by definition not a protrusion. Thus, for instance, if every space between electrodes had a protrusion such as 1015, then there would be no grooves, and the device would not read on the claim language. Does the applicant agree with this interpretation of the claim language? If this is the intent of the applicant, the present claim language is acceptable; if not, they should clarify what is meant in their response.

Claim 10 has a similarly recited "groove" to which the same question applies.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 10-12, 14, 16, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by *Kishimoto*, U.S. Patent No. 6,424,402.

Kishimoto '402 discloses [see Fig. 1, for instance] a liquid crystal panel comprising a front plate [2b], a rear plate [2a] including a plurality of groups, each group

having two pixel electrodes [choose any two neighboring electrodes 7a as a group], each group having two pixel electrodes and a protrusion [8] therebetween, wherein the groups are separated from each other by respective grooves [the grooves running between the relevant electrodes 7a], and a liquid crystal layer [31] with which the space between the front plate and rear plate is filled, wherein the liquid crystal layer has liquid crystal molecules in vertical alignment mode [col. 6, line 11, for instance]. Claim 10 is therefore anticipated.

The protrusion is made of acrylic resin [col. 9, line 10]; the examiner takes official notice that this is a dielectric material of low dielectric constant, having dielectric constant smaller than 10, so claims 11 and 12 are also anticipated. The front plate and the rear plate are apart in a cell gap and the protrusion has a height of at least one fifth of the cell gap, so claim 14 is also anticipated. The indicated protrusions and the indicated grooves are arranged alternately, so claim 16 is also anticipated. The rear plate further comprises an insulating layer [5], the pixel electrodes are disposed above the insulating layer, and the groove have a depth larger than that of the pixel electrodes, so claim 18 is also anticipated.

9. Claims 10-12, 14, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by *Kishimoto*, U.S. Patent No. 6,072,557.

Kishimoto '557 discloses [see Fig. 1a, for instance] a liquid crystal panel comprising a front plate [30], a rear plate [10] including a plurality of groups, each group having two pixel electrodes [choose two electrodes 20 on either side of a column 22 as a group], each group having two pixel electrodes and a protrusion [22] therebetween,

Art Unit: 2871

wherein the groups are separated from each other by respective grooves [a groove running between the electrodes away from the columns], and a liquid crystal layer [40] with which the space between the front plate and rear plate is filled, wherein the liquid crystal layer has liquid crystal molecules in vertical alignment mode [col. 7, line 4, for instance]. Claim 10 is therefore anticipated.

The protrusion is made of acrylic resin [col. 10, line 21]; the examiner takes official notice that this is a dielectric material of low dielectric constant, having dielectric constant smaller than 10, so claims 11 and 12 are also anticipated. The front plate and the rear plate are apart in a cell gap and the protrusion has a height of at least one fifth of the cell gap, so claim 14 is also anticipated. The indicated protrusions and the indicated grooves are arranged alternately, so claim 16 is also anticipated. The groove has a depth equal to that of the pixel electrodes, so claim 17 is also anticipated.

Allowable Subject Matter

10. Claims 13 and 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. Claims 1-9 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

12. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the LCD of claim 1, in particular with vertically aligned liquid crystal molecules, wherein every two pixel electrodes are paired as a pixel electrode group, the groups separated by a groove, and the pixel electrodes of each pixel electrode group are separated by a protrusion (as these terms are understood by the examiner, see above). Claim 1, and its dependent claims 2-9, would therefore be allowable if the rejection under 35 USC 112, 2nd paragraph were overcome appropriately. (Note that in *Kishimoto*, relied upon above, the pixel electrodes have a protrusion therebetween, but they are not "separated" by the protrusion, in the sense of being set apart or made distinct by the protrusion; compare to the applicants' Fig. 10A in which the protrusions "separate" the pixel electrodes; if the applicant disagrees with this interpretation, they should of course bring it to the attention of the examiner immediately).

The prior art does not disclose the LCD of claim 13, in particular the additional limitation that the protrusion is made of silicon dioxide. Also, the prior art does not disclose the LCD of claim 15, in particular the additional limitation that the groove has a first and second inclinations, which oppose each other. These claims would therefore be allowable if the rejection under 35 USC 112, 2nd paragraph was overcome, and if the claims were rewritten appropriately.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nelms can be reached at (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Schechter
Primary Examiner
Technology Center 2800
24 November 2006